



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Technologies for manufacturing rail vehicles

### Course

Field of study

Year/Semester

Transport

3/5

Area of study (specialization)

Profile of study

Rail transport

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

15

Tutorials

Projects/seminars

0

0

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr inż. Paweł Komorski

Responsible for the course/lecturer:

mgr inż. Julian Kominowski

email: pawel.komorski@put.poznan.pl

email: julian.kominowski@put.poznan.pl

tel. +48 61 665-2023

tel. 616652841

### Prerequisites

Knowledge: The student has a basic knowledge of the aging processes of means of transport. The student knows the construction of road and rail vehicles and the basics of technology. Skills: The student is able to use the acquired knowledge to plan the repair process for both a road and rail vehicle. Social competences: The student is able to work in a group, organize the repair process in its main outline. The student is able to define important priorities. when solving the tasks set before him.

### Course objective

The aim of the course is to learn about the physical aging processes of rail vehicles maintenance methods, repair and basic operational activities. Presentation of vehicle repair technology, also familiarization with assembly and disassembly as well as final acceptance of vehicles.

### Course-related learning outcomes

Knowledge



1. The student has knowledge of important development trends and the most important technical achievements and of other related scientific disciplines, in particular transport engineering.
2. The student has a basic knowledge of the life cycle of means of transport, both equipment and software, and in particular about the key processes occurring in the product life cycle.
3. The student knows the basic techniques, methods and tools used in the process of solving tasks in the field of transport, mainly of an engineering nature engineering.

#### Skills

1. The student is able to take into account in the process of formulating and solving tasks in the field of transport engineering also non-transport aspects, in particular social, legal and economic issues.
2. Student is able to assess - at least in a basic scope - various aspects of the risk associated with a transport project.
3. Student is able to make a critical analysis of the functioning of transport systems and other technical solutions and to evaluate these solutions, including: is able to effectively participate in the technical inspection and assess the transport task from the point of view of non-functional requirements, has the ability to systematically conduct functional tests.

#### Social competences

1. The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life.
2. The student can think and act in an entrepreneurial way, incl. finding commercial applications for the created system, taking into account not only business benefits, but also social benefits of the conducted activity.
3. The student correctly identifies and solves dilemmas related to the profession of a transport engineer.

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

- final test (written or verbal)

#### Programme content

As part of the classes, students will learn about examples of damage to the basic sets of vehicles and means of transport. Causes of damage and methods of their diagnosis. Repair techniques are discussed in detail, including: disassembly of a part or assembly, assessment of the technical condition, selection of a given repair technique as well as preparation and equipment of the stand for repair. In addition, issues related to work safety while repairing a vehicle and methods of proceeding in the event of a hazard are discussed.

#### Teaching methods



1. Lecture with multimedia presentation
2. Possible didactic trip to the entity producing or maintaining the rolling stock

### Bibliography

#### Basic

1. Kozłowski M.: Budowa i eksploatacja pojazdów, t. II: Obsługa, diagnostyka i naprawa zespołów i podzespołów. Wyd. Vogel Publishing, Wrocław 2003.
2. Marczewski R., Płończak Z., Podemski J.: Wagony towarowe - poradnik techniczny. WKŁ, Warszawa 1975.
3. Cypko J., Cypko E.: Podstawy technologii i organizacji naprawy pojazdów mechanicznych. WKŁ, Warszawa 1989.
4. Gieżyński S.: Technologia wytwarzania pojazdów szynowych. Wydawnictwo Politechniki Poznańskiej, Poznań 1979.

#### Additional

1. Moczarski M.: Podstawy organizacji i techniki obsługi pojazdów szynowych. Wydawnictwo Politechniki Warszawskiej, Warszawa 1986.
2. Gronowicz J., Technologia naprawy pojazdów szynowych, maszyny i urządzenia elektryczne. Wydawnictwo Politechniki Poznańskiej, Poznań 1993.
3. Marczewski R., Podemski J., Wózki wagonowe. Wydawnictwo Komunikacji i Łączności, Warszawa 1980.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	55	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	25	1,0

<sup>1</sup> delete or add other activities as appropriate